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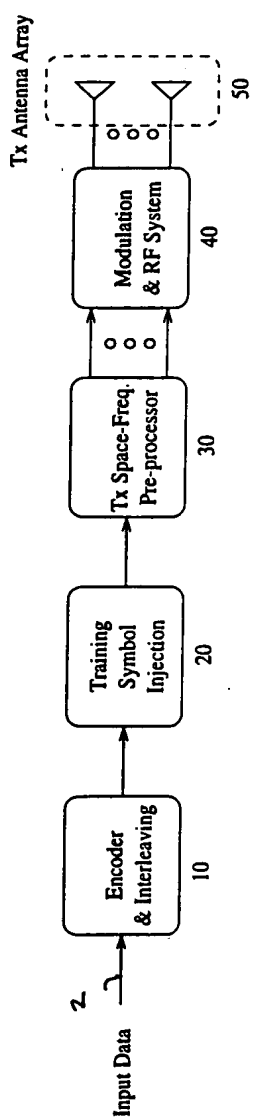


Figure 1

26

26 Seq

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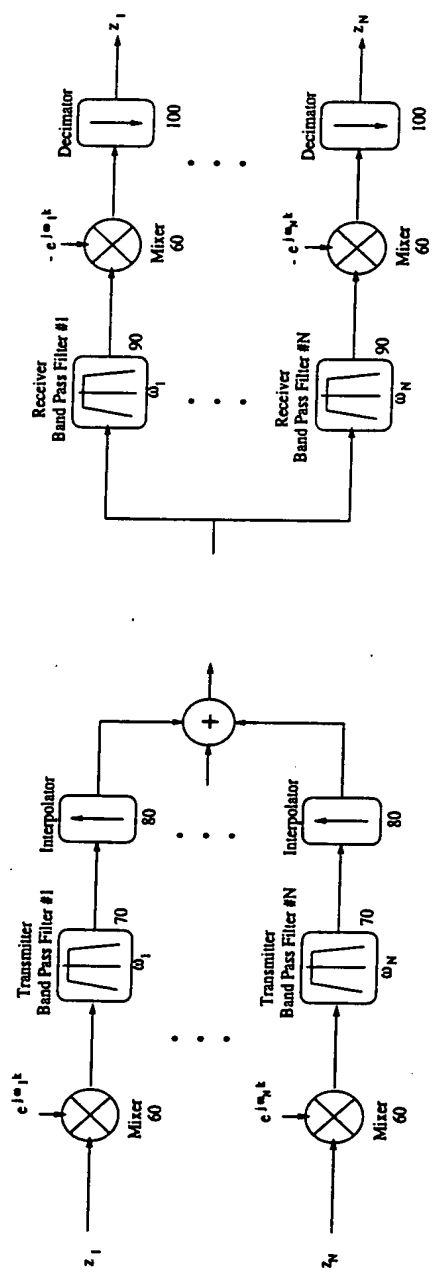


Figure 2

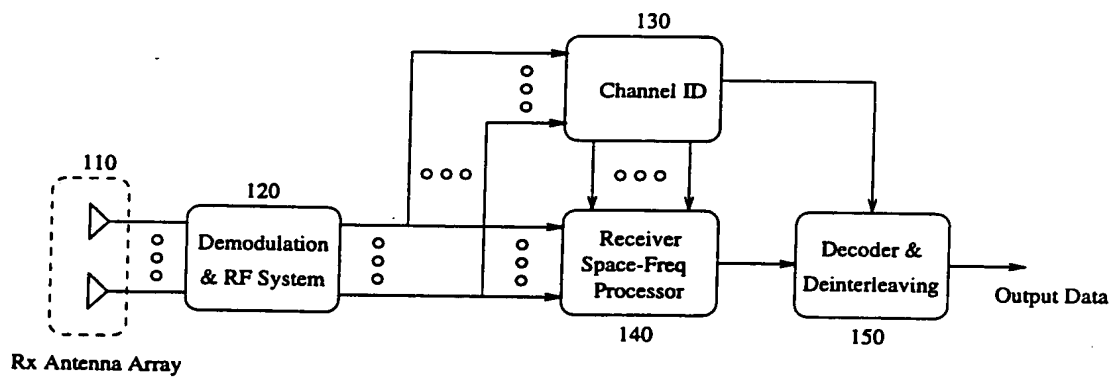


Figure 3

Multipath can be more than one reflected or refracted path in a wireless propagation channel with antenna elements that have one polarization.

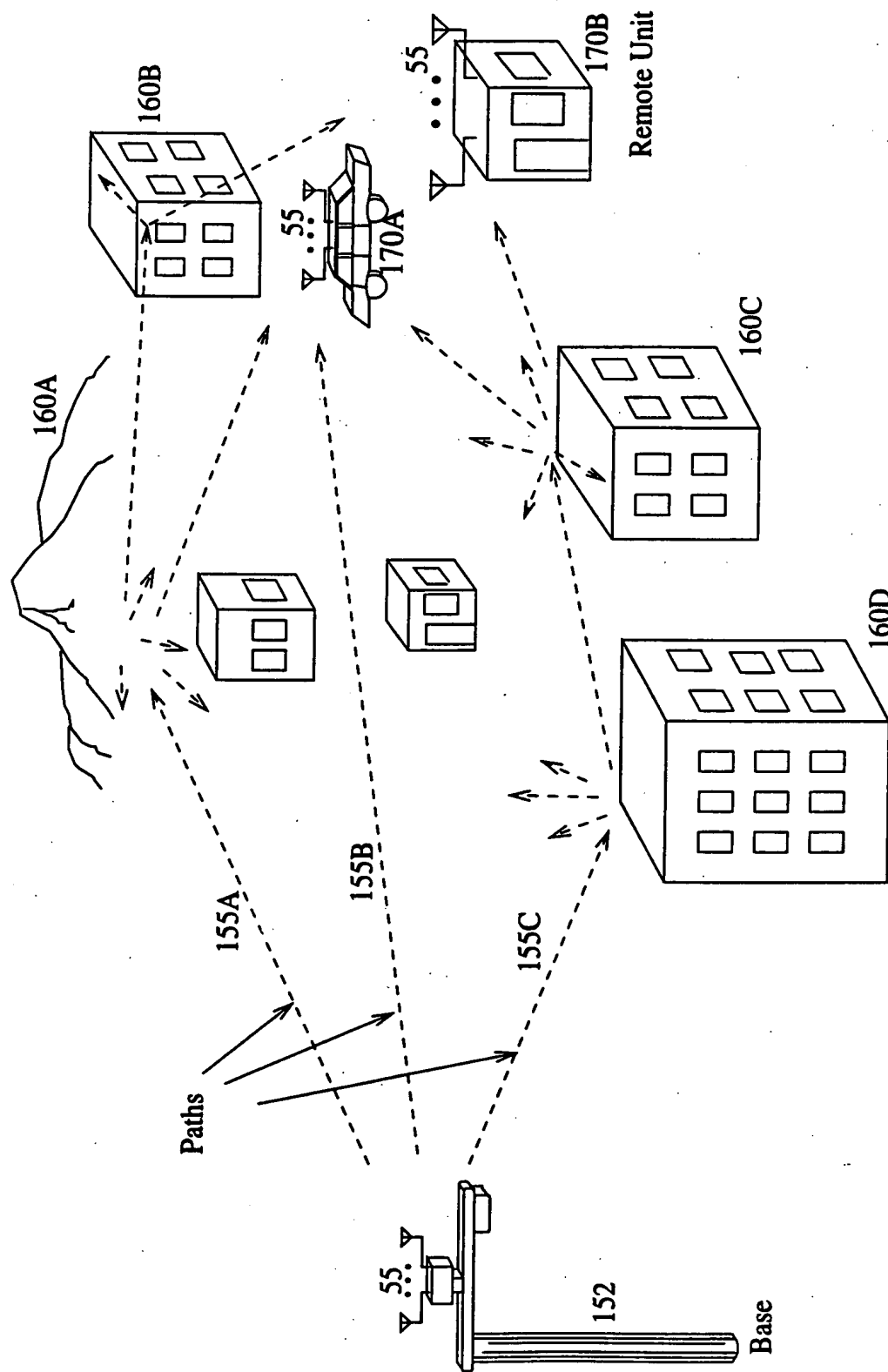


Figure 4

Multipath can be one or more paths with polarization A and one or more paths with polarization B. The two sets of paths may or may not be orthogonal.

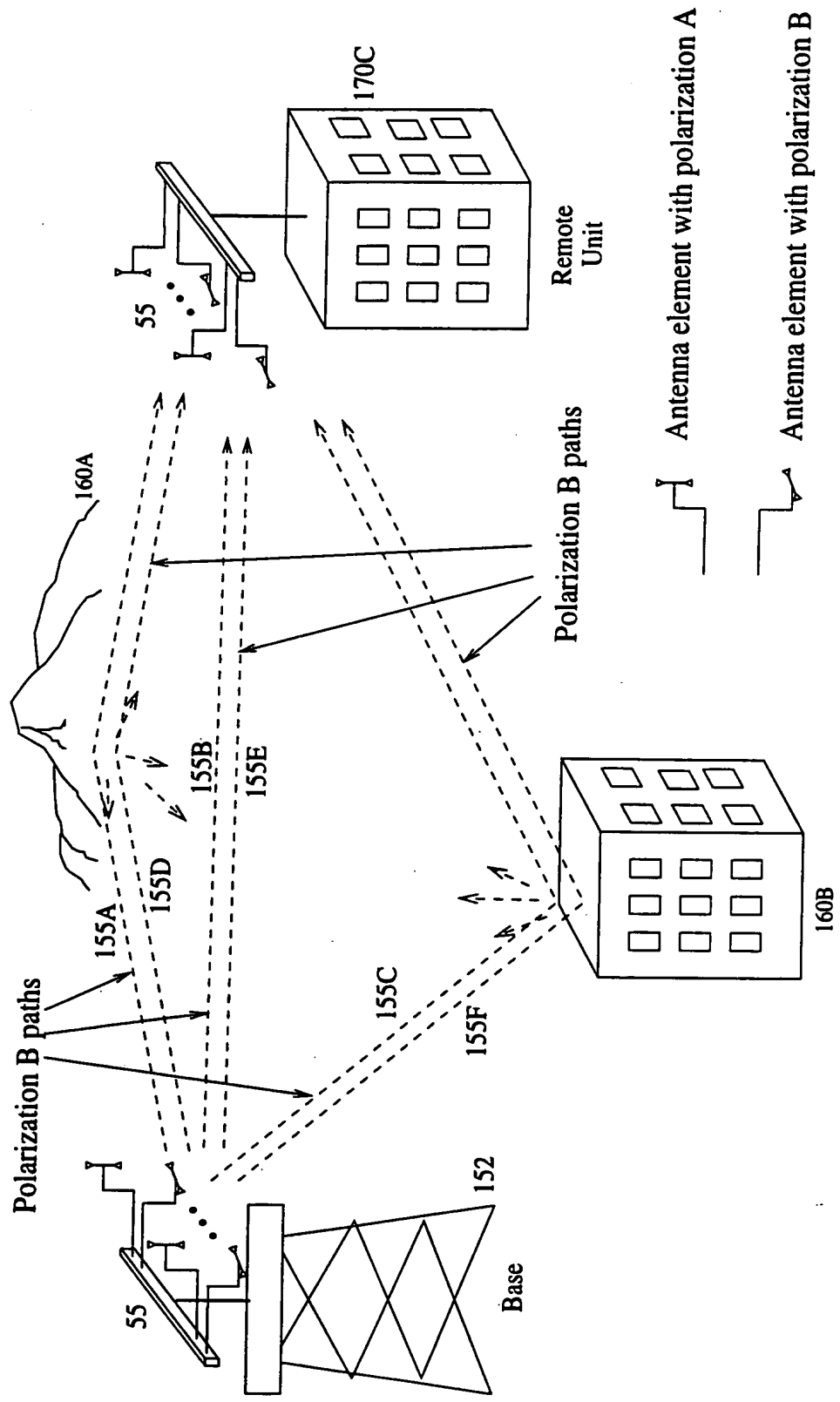


Figure 5

Multipath can be one or more paths between a remote and one radio port
and one or more paths between the remote and another radio port.

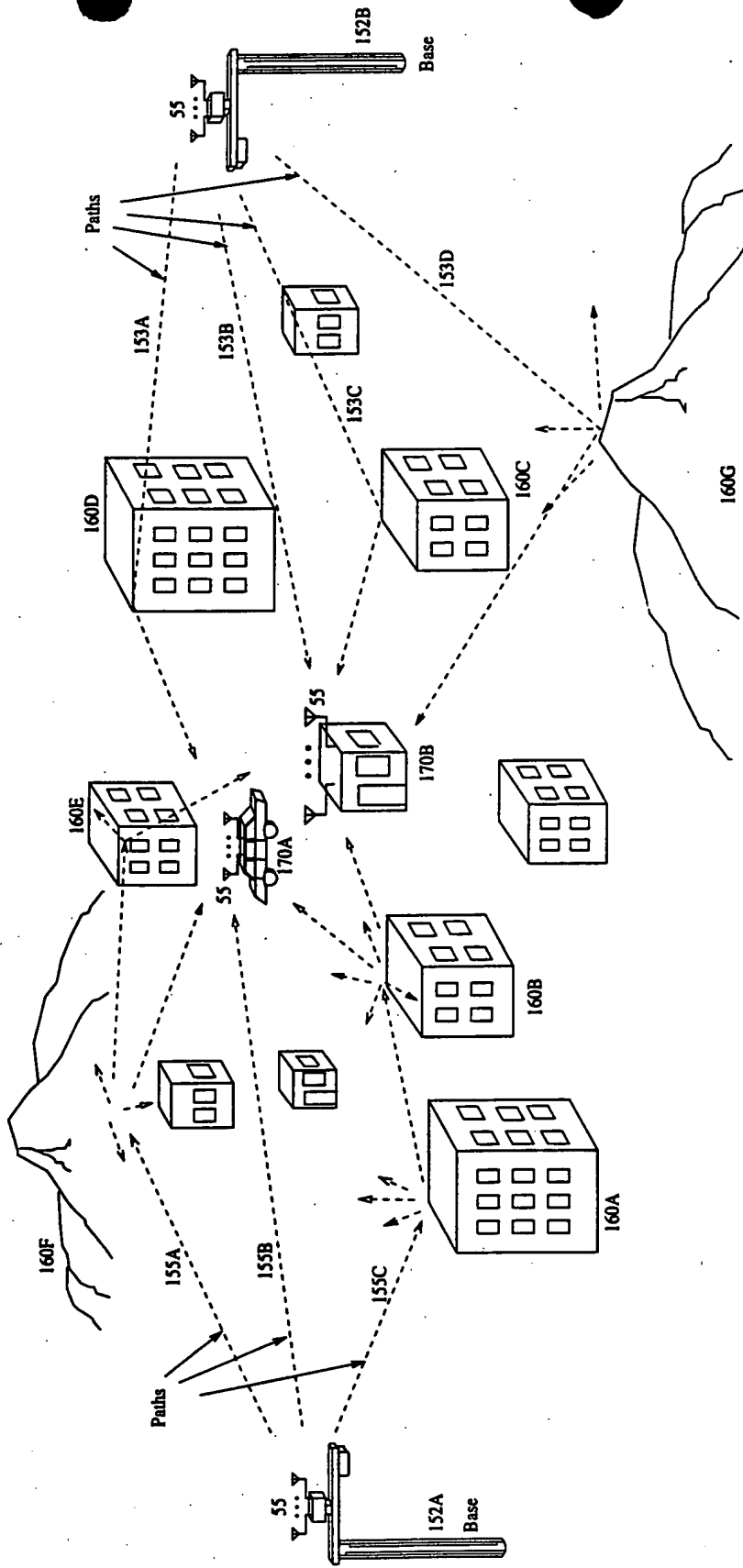


Figure 6

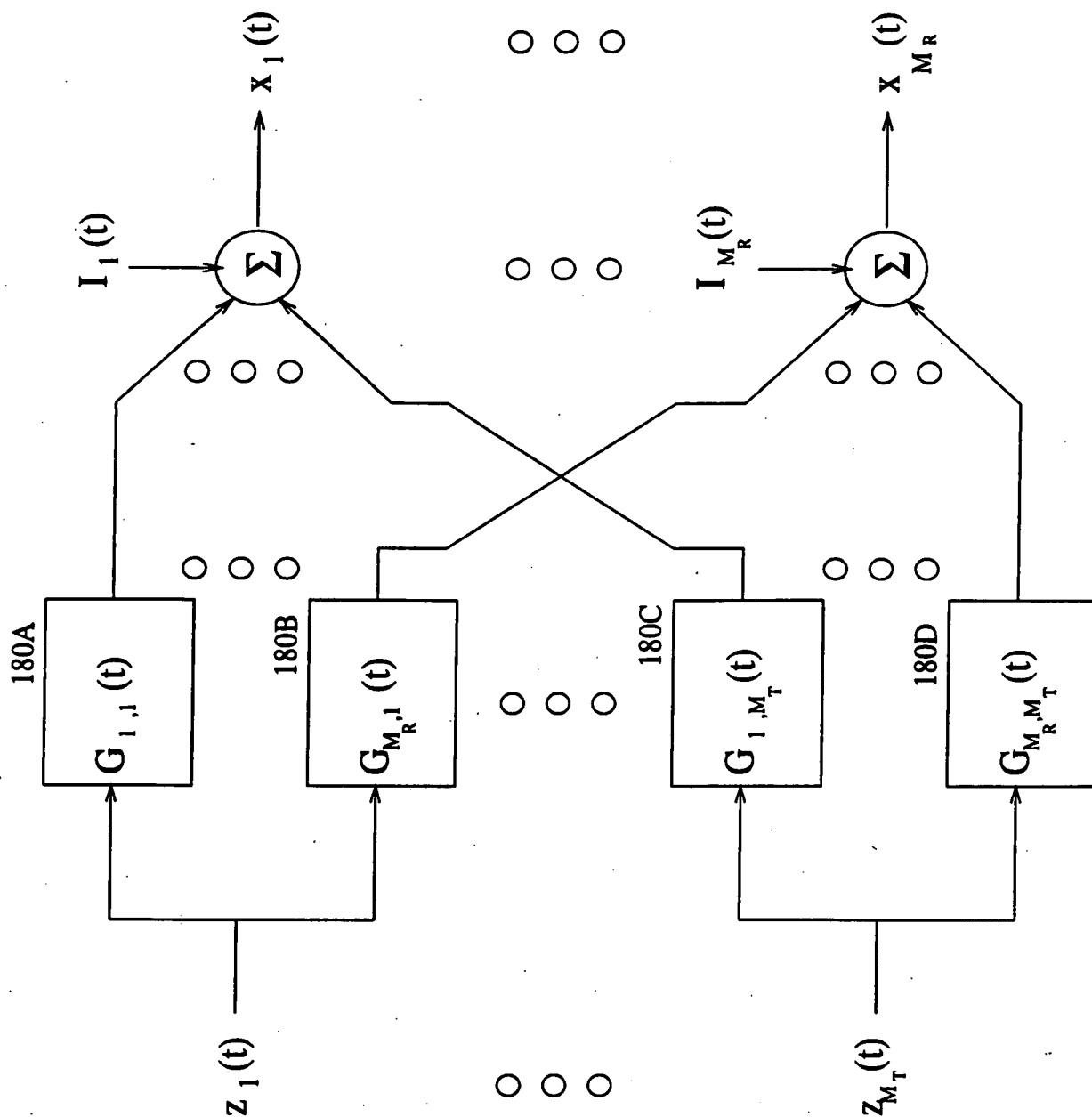
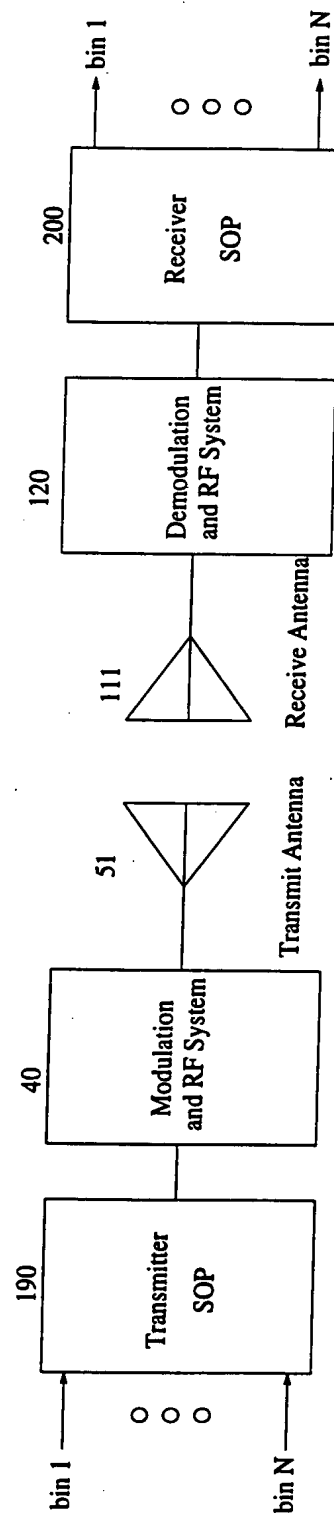


Figure 7



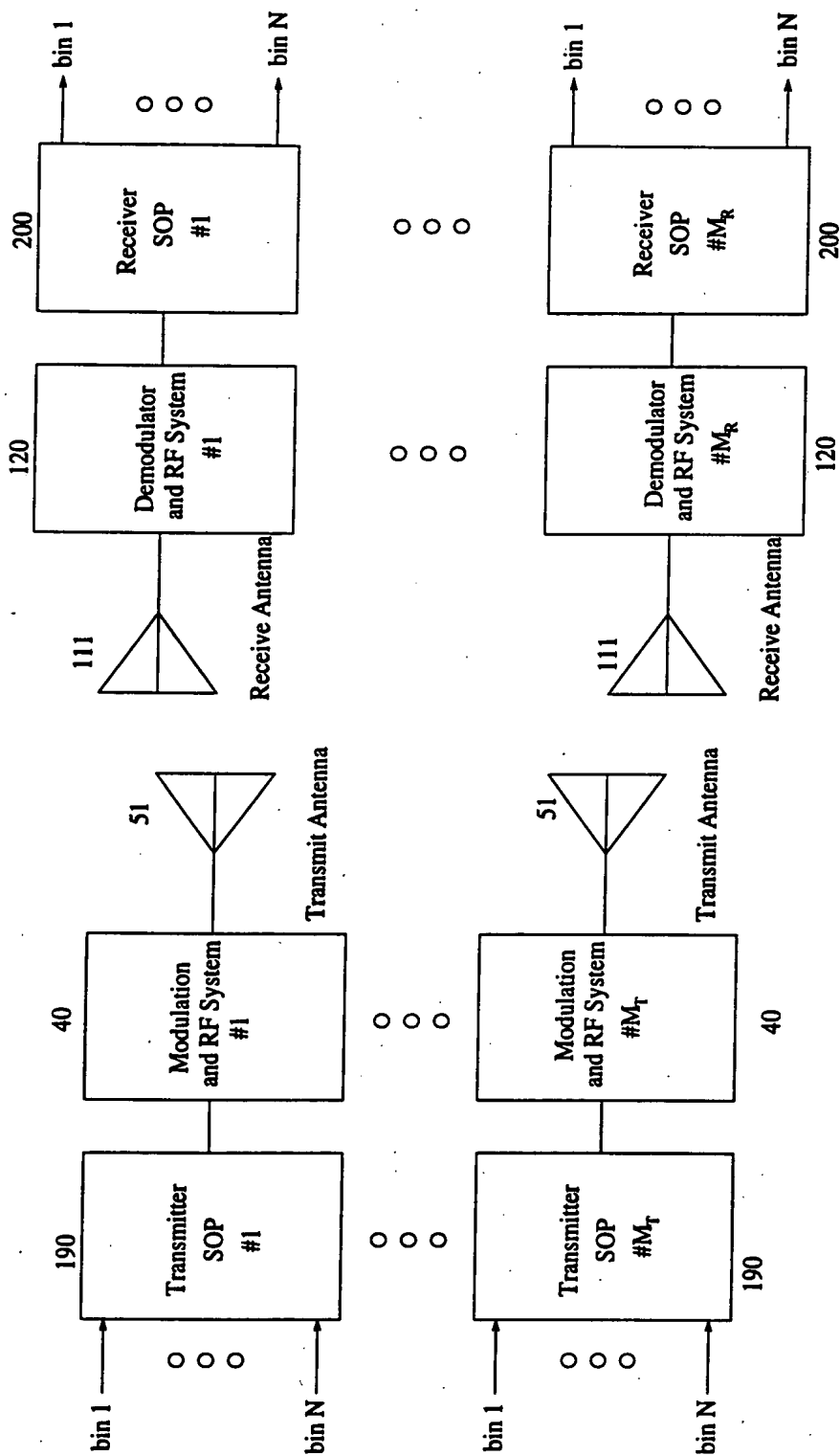


Figure 9

The diagram illustrates a multi-carrier communication system, likely for OFDM, showing both transmit and receive paths. The system is organized into two main sections: a transmit path on the left and a receive path on the right, with a central processing area.

Transmit Path (Left Side):

- Inputs:** The transmit path starts with a data vector $\mathbf{z}(1)$ (labeled 202) and a pilot vector \mathbf{P}_T (labeled 202).
- IFFT Blocks:** These inputs are processed by a series of Inverse Fast Fourier Transform (IFFT) blocks, labeled IFFT 1 (205) through IFFT M_T (205).
- Add Cyclic Prefix:** The output of each IFFT block is passed to an "Add Cyclic Prefix" block (207).
- Channel Blocks:** The signal then passes through a series of channel blocks, labeled $G_{1,1}$ (180) through G_{1,M_T} (180) for the first path, and $G_{M_r,1}$ (180) through G_{M_r,M_T} (180) for the M_r th path.
- Summation:** The outputs of these channel blocks are summed at a summation node Σ (206).
- Remove Cyclic Prefix:** The summed signal is then processed by a "Remove Cyclic Prefix" block (206).
- FFT Blocks:** The output of the removal block is processed by a series of Fast Fourier Transform (FFT) blocks, labeled FFT 1 (208) through FFT M_r (208).
- Outputs:** The final output is a vector $\mathbf{x}(1)$ (labeled 204) and a pilot vector \mathbf{P}_R (labeled 204).

Receive Path (Right Side):

- Inputs:** The receive path starts with a data vector $\mathbf{x}(1)$ (labeled 202) and a pilot vector \mathbf{P}_T (labeled 202).
- IFFT Blocks:** These inputs are processed by a series of Inverse Fast Fourier Transform (IFFT) blocks, labeled IFFT 1 (205) through IFFT M_T (205).
- Add Cyclic Prefix:** The output of each IFFT block is passed to an "Add Cyclic Prefix" block (207).
- Channel Blocks:** The signal then passes through a series of channel blocks, labeled $G_{1,1}$ (180) through G_{1,M_T} (180) for the first path, and $G_{M_r,1}$ (180) through G_{M_r,M_T} (180) for the M_r th path.
- Summation:** The outputs of these channel blocks are summed at a summation node Σ (206).
- Remove Cyclic Prefix:** The summed signal is then processed by a "Remove Cyclic Prefix" block (206).
- FFT Blocks:** The output of the removal block is processed by a series of Fast Fourier Transform (FFT) blocks, labeled FFT 1 (208) through FFT M_r (208).
- Outputs:** The final output is a vector $\mathbf{x}(1)$ (labeled 204) and a pilot vector \mathbf{P}_R (labeled 204).

Central Processing Area:

- Channel Blocks:** A series of channel blocks, labeled $G_{1,1}$ (180) through G_{1,M_T} (180) for the first path, and $G_{M_r,1}$ (180) through G_{M_r,M_T} (180) for the M_r th path.
- Summation:** The outputs of these channel blocks are summed at a summation node Σ (206).
- Remove Cyclic Prefix:** The summed signal is then processed by a "Remove Cyclic Prefix" block (206).
- FFT Blocks:** The output of the removal block is processed by a series of Fast Fourier Transform (FFT) blocks, labeled FFT 1 (208) through FFT M_r (208).
- Outputs:** The final output is a vector $\mathbf{x}(1)$ (labeled 204) and a pilot vector \mathbf{P}_R (labeled 204).

Figure 10

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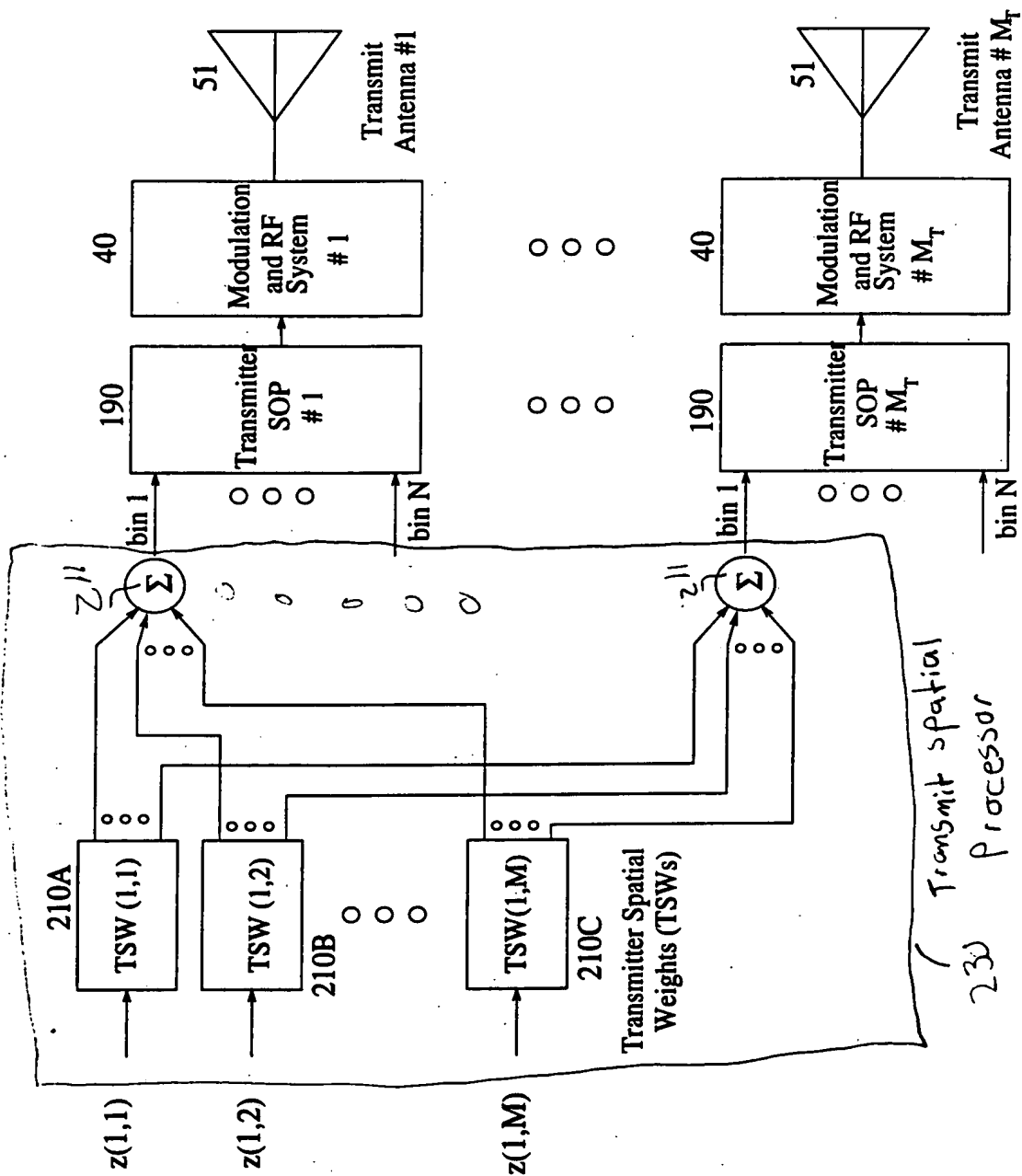


Figure 11

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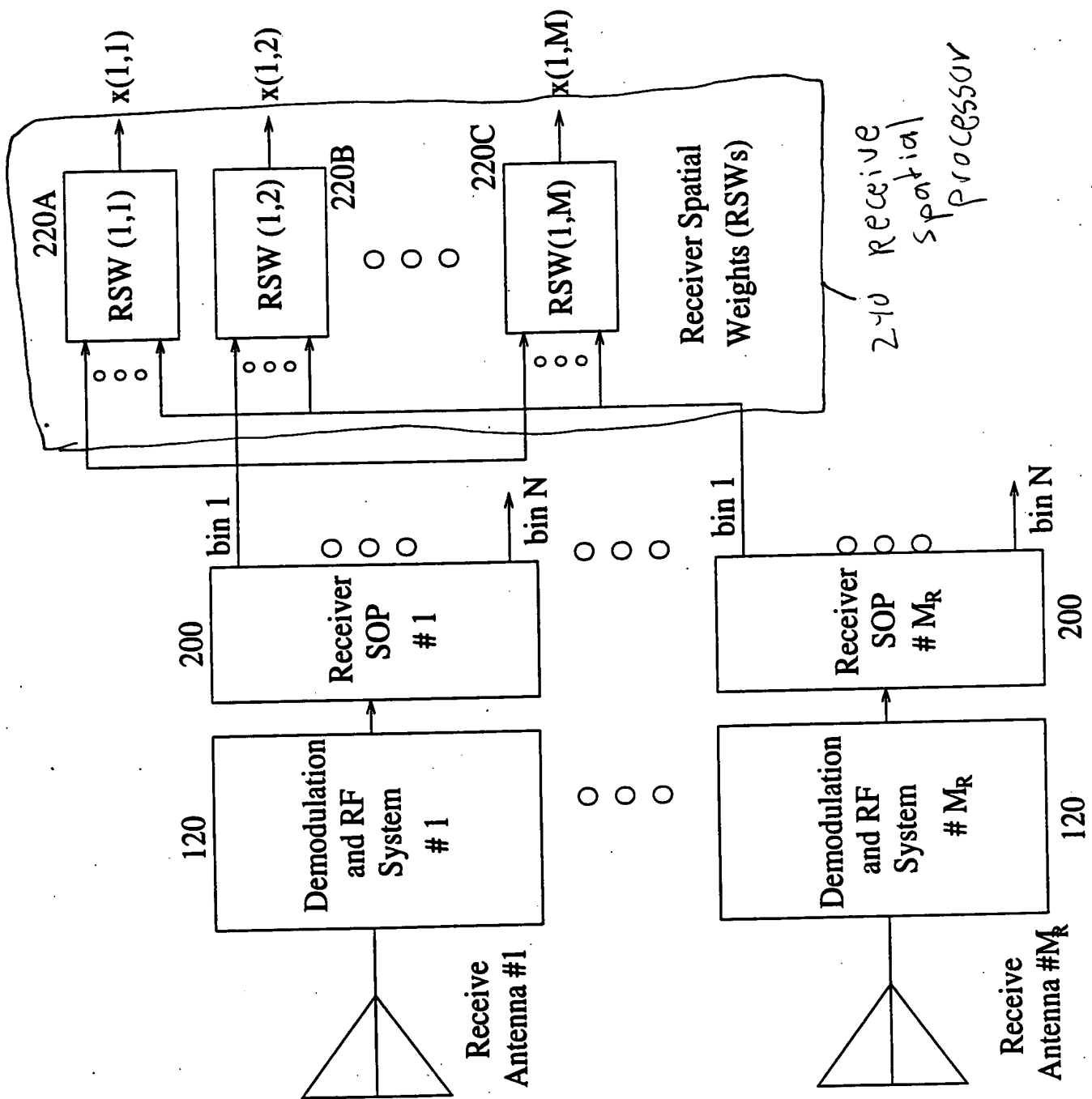


Figure 12

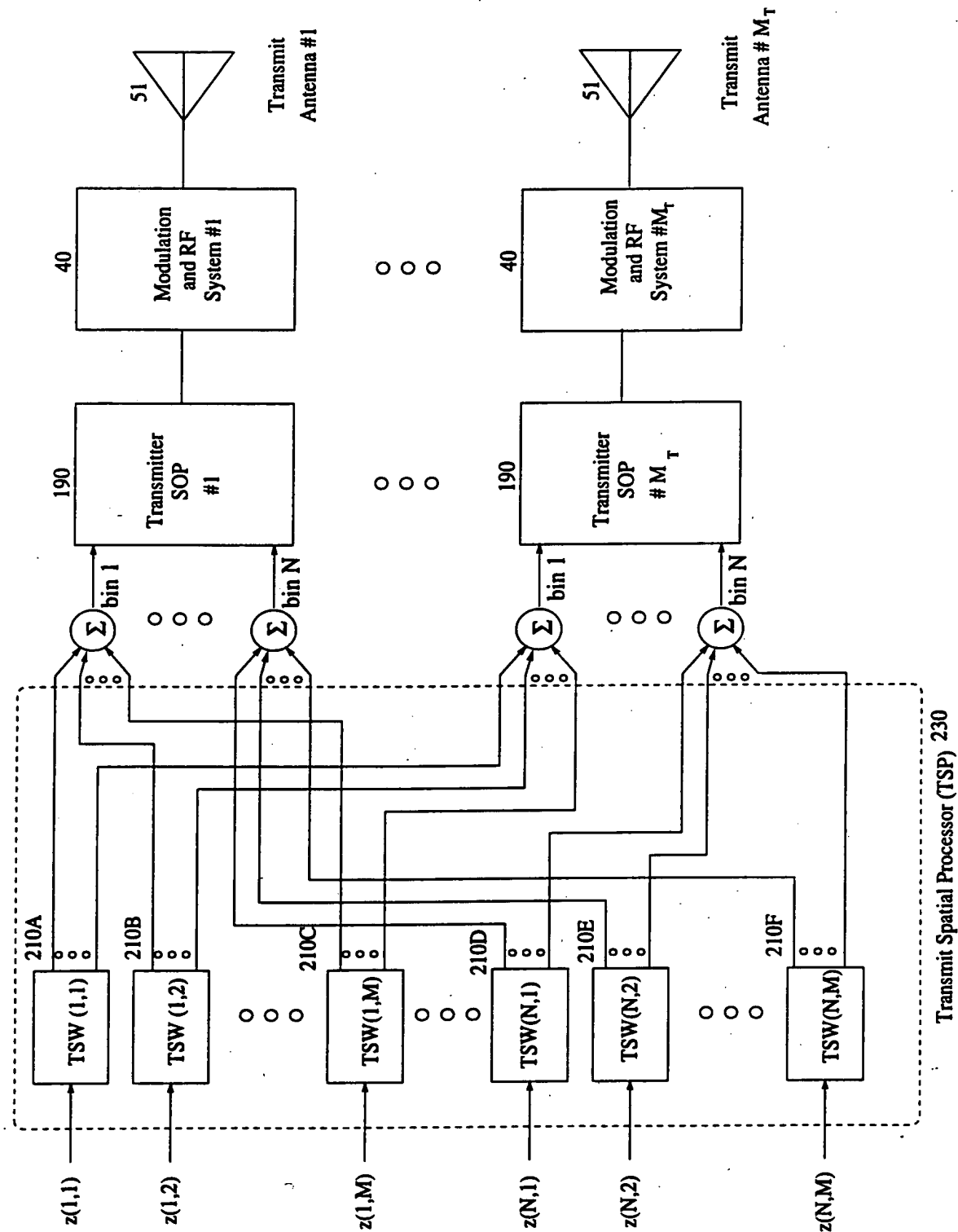
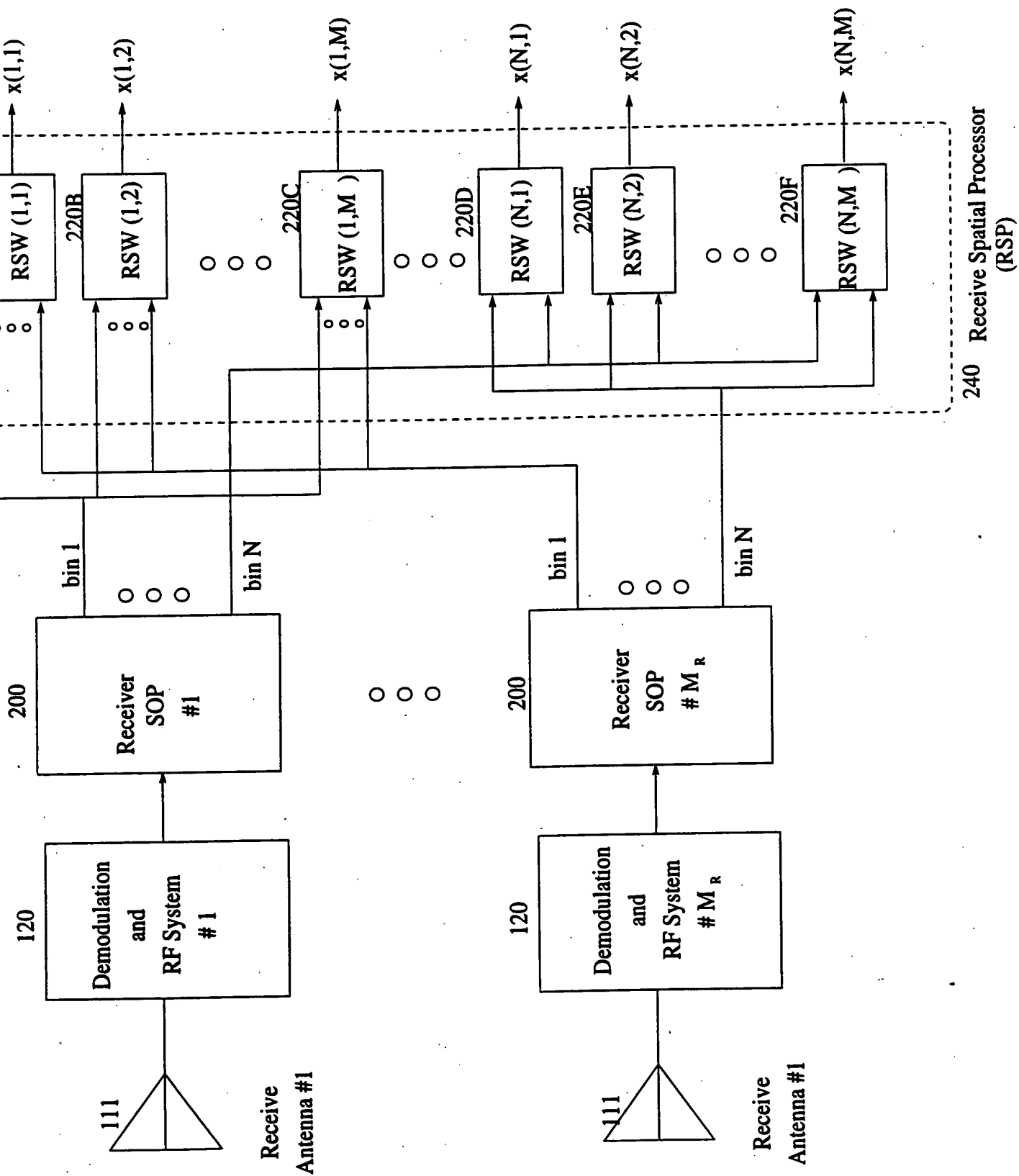


Figure 13



Frax 121

The diagram illustrates a Transmit Spatial Processor (TSP) 230. It consists of two Transmitted Signal Waveform (TSW) blocks, 210A and 210B, and a set of Transmitters (SOP #1 to Transmitter SOP #M_T). The TSP receives inputs $z(1,1)$ and $z(N,1)$. The outputs of the TSW blocks are connected to the inputs of the Transmitters via a crossbar switch. The outputs of the Transmitters are labeled bin 1 and Bin N.

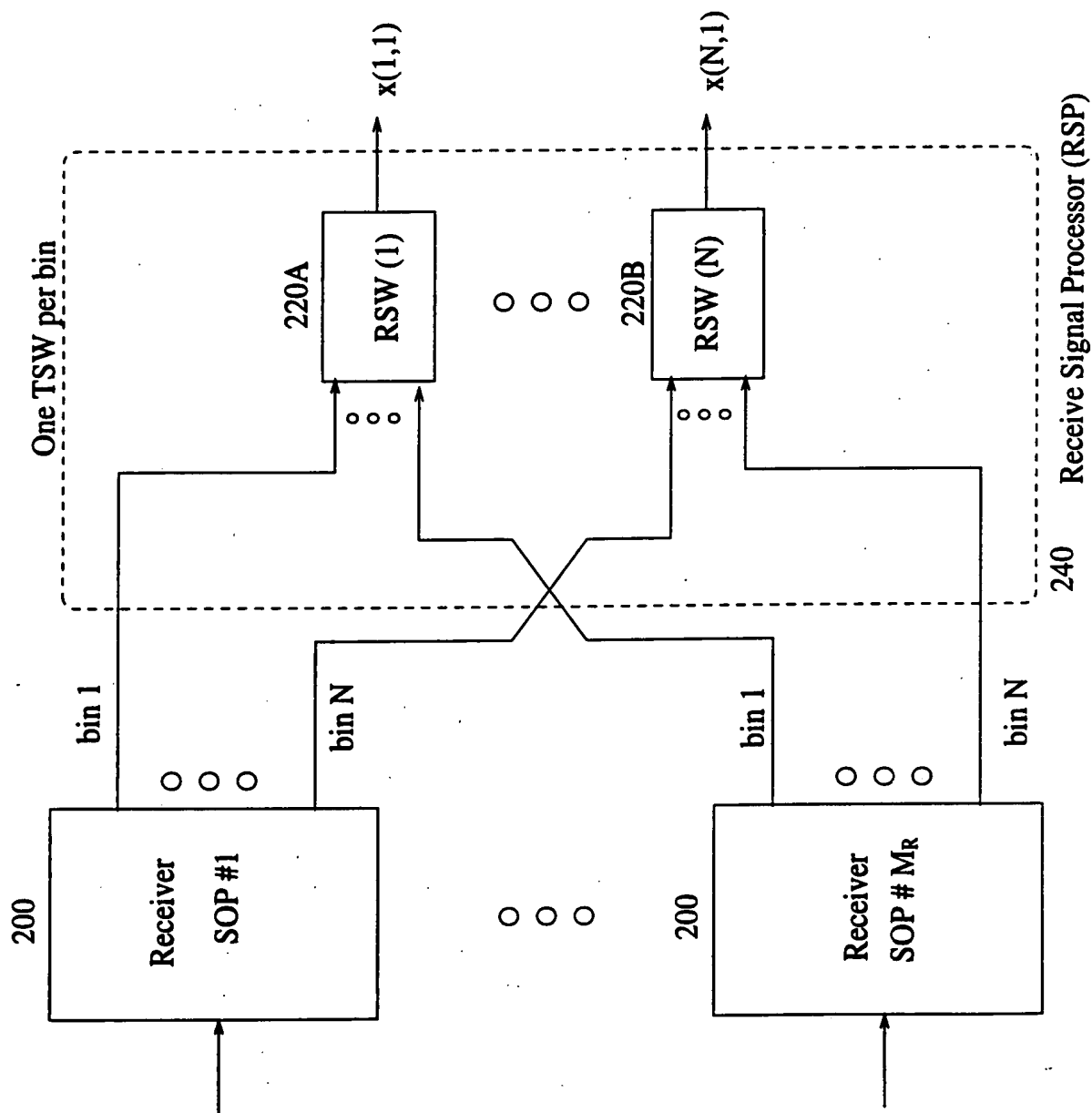


Figure 16

The diagram illustrates a system with multiple transmitters. On the left, there are two transmitter blocks labeled 'Transmitter SOP #1' and 'Transmitter SOP #M', with vertical labels 190 to their left. Between them are three vertical ellipses. Each SOP block has two input arrows from below, labeled $z(1,1)$ and $z(N,1)$ for the first, and $z(1,M)$ and $z(N,M)$ for the M-th. Above each SOP block is a TSW block labeled 'TSW #1' and 'TSW #M', with vertical labels 210A and 210B to their left. Between them are three vertical ellipses. Arrows from each TSW block cross and connect to the summing junctions of the opposite transmitter. To the right of each TSW block is a circular summing junction with a '+' sign. Above each summing junction is a block labeled 'Modulation and RF System #1' and 'Modulation and RF System #M_T', with vertical labels 40 to their left. Between them are three vertical ellipses. Each modulation block is connected to a triangular antenna labeled 'Transmit Antenna #1' and 'Transmit Antenna # M_T', with vertical labels 51 to their left. Between the two antenna columns are three vertical ellipses.

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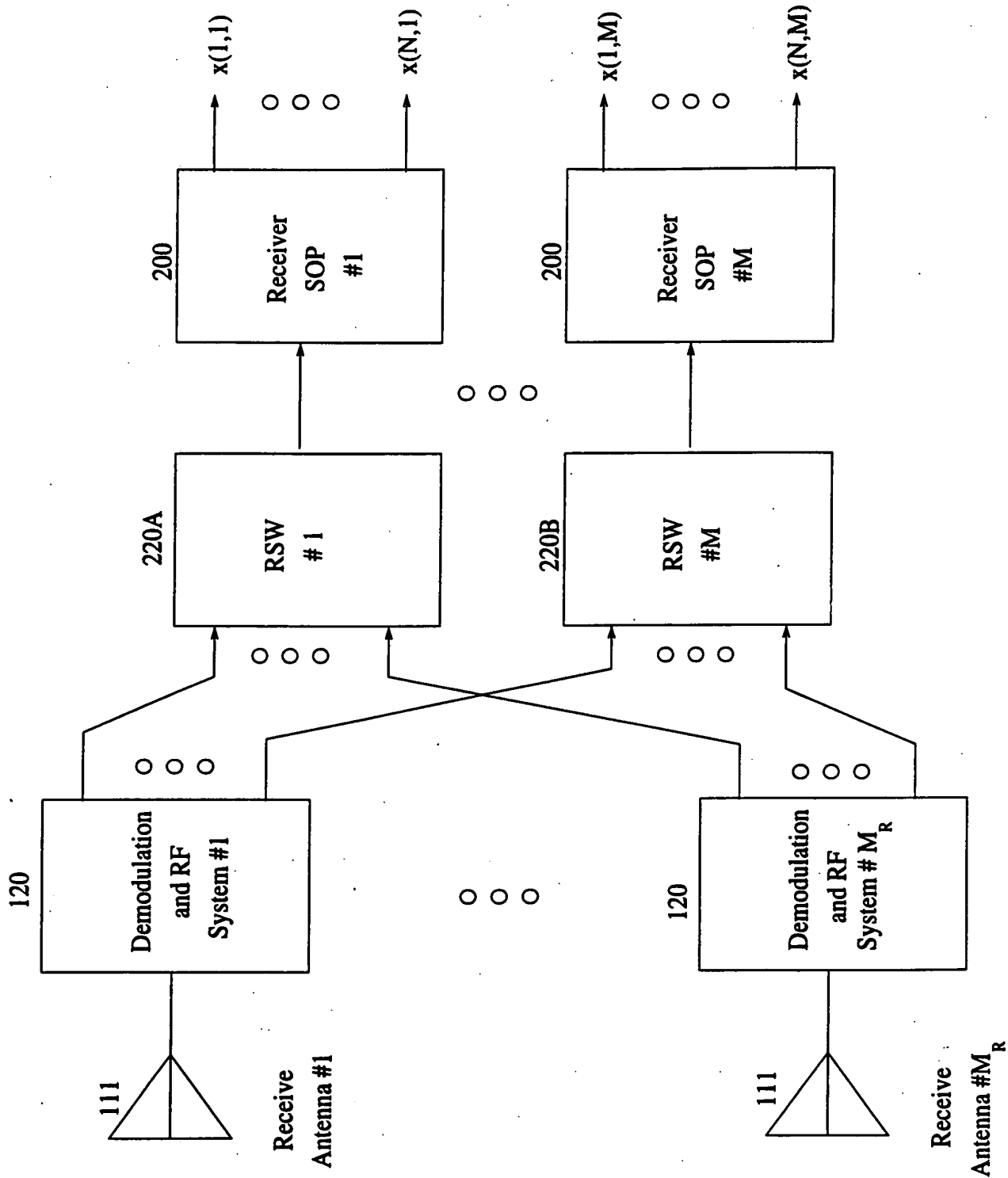


Figure 18

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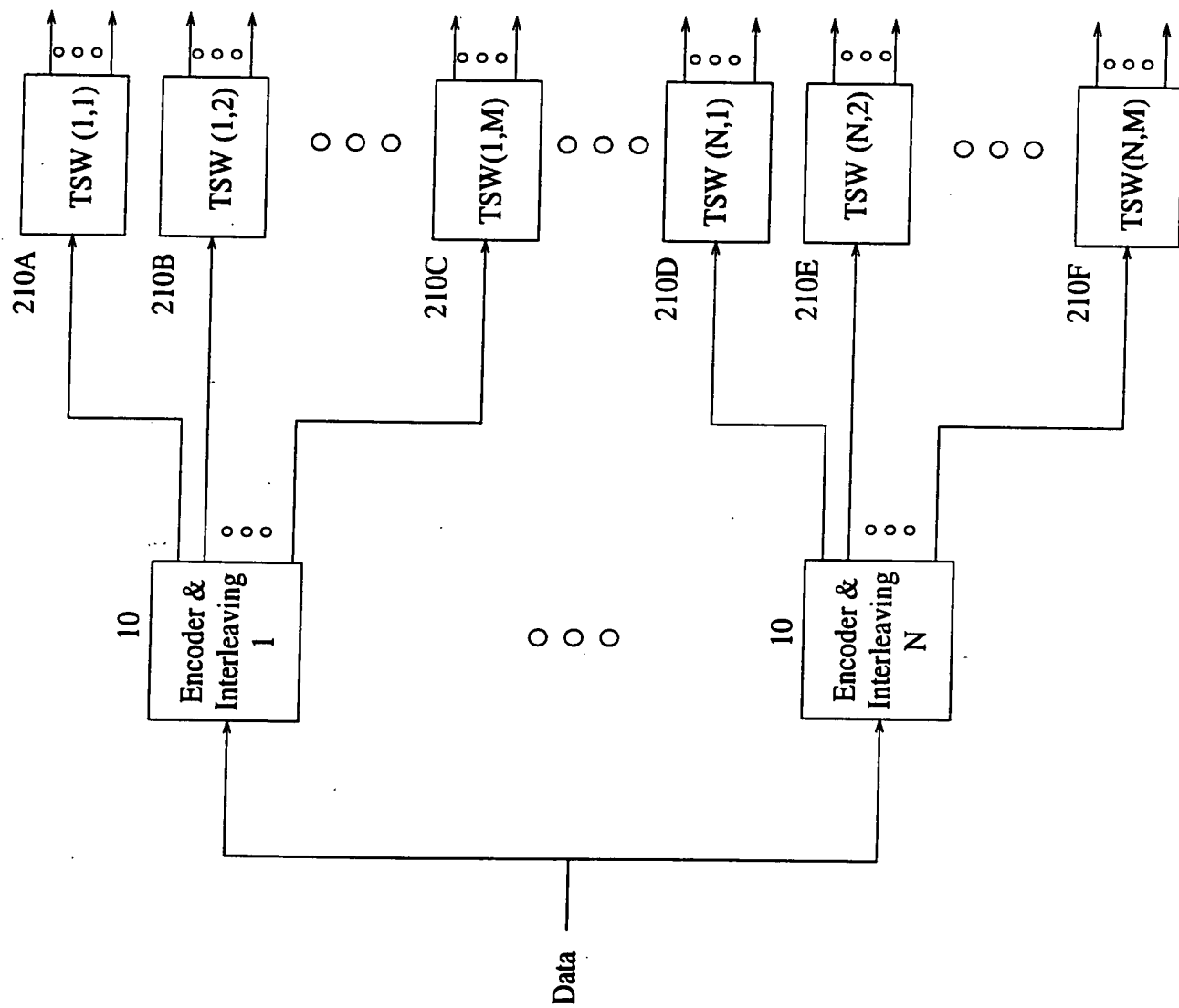


Fig. 19.

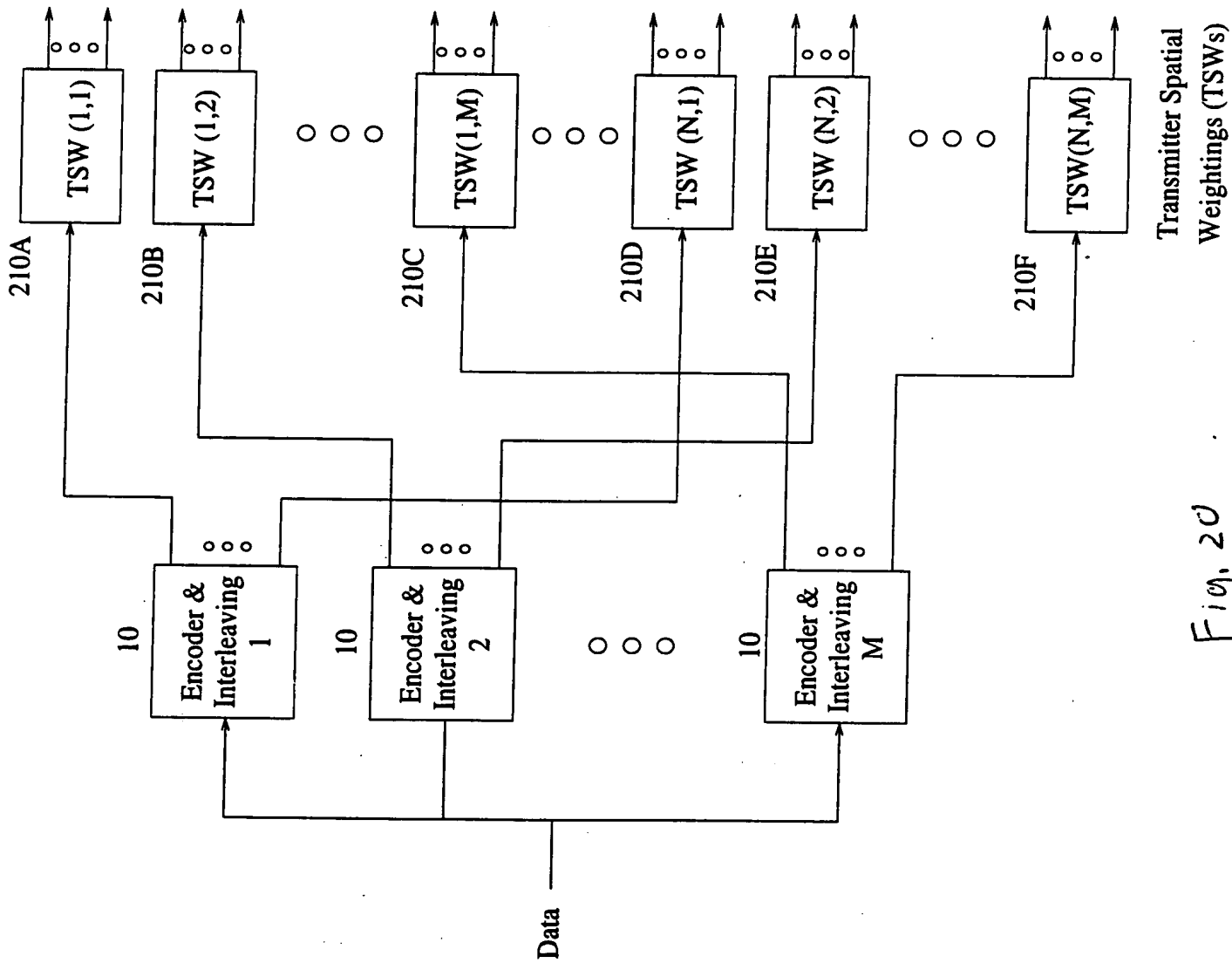


Fig. 20

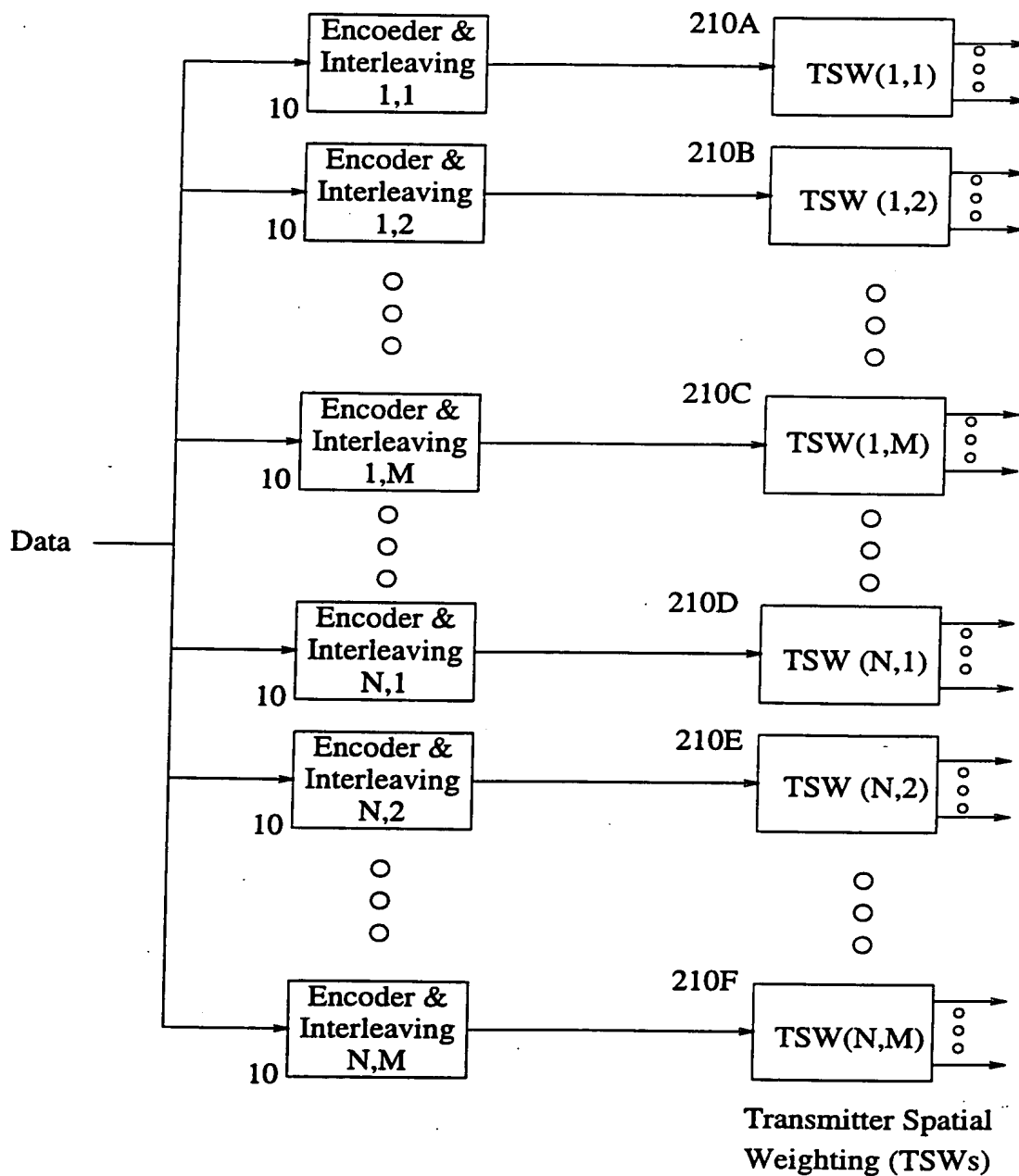


Fig. 21

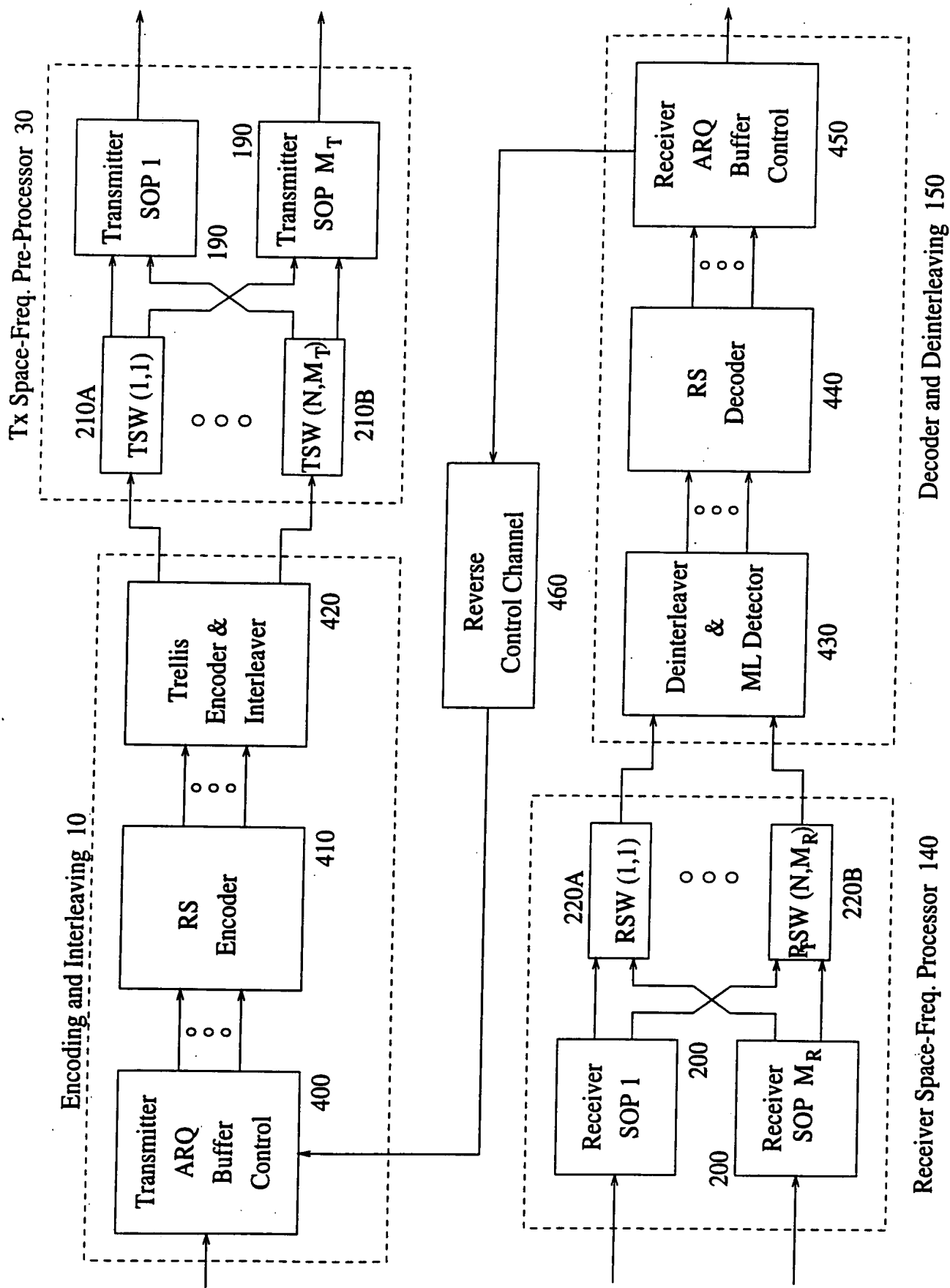


Fig. 22.

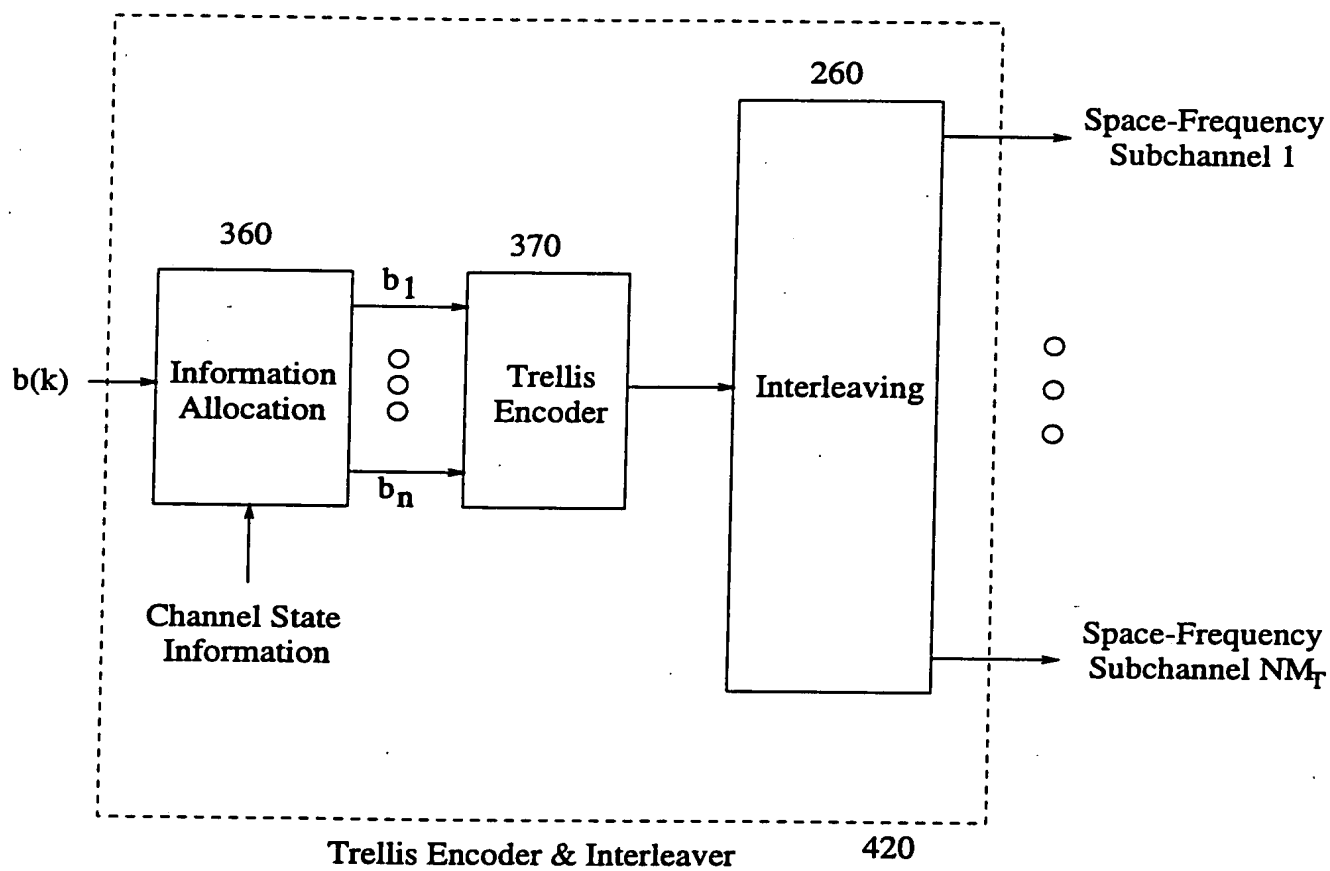


Fig. 23

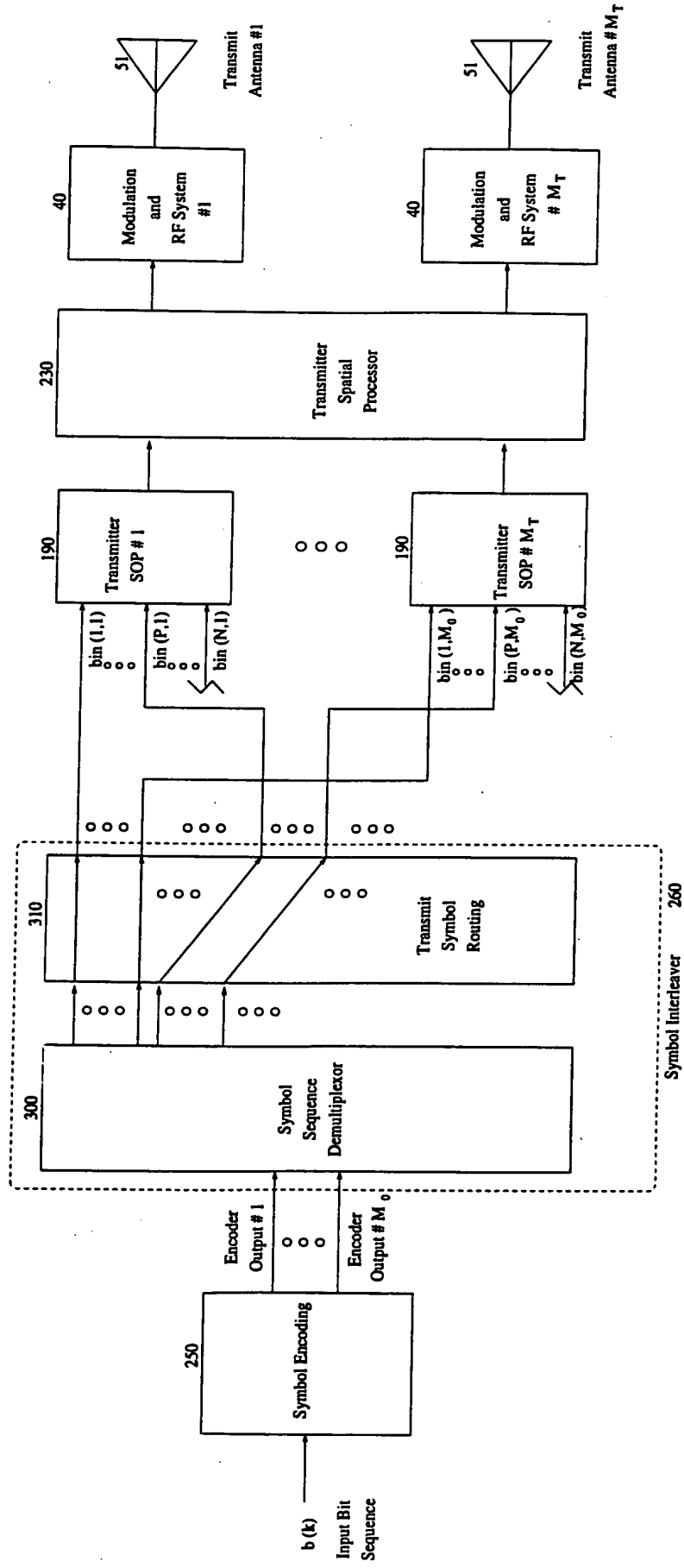


Fig. 24

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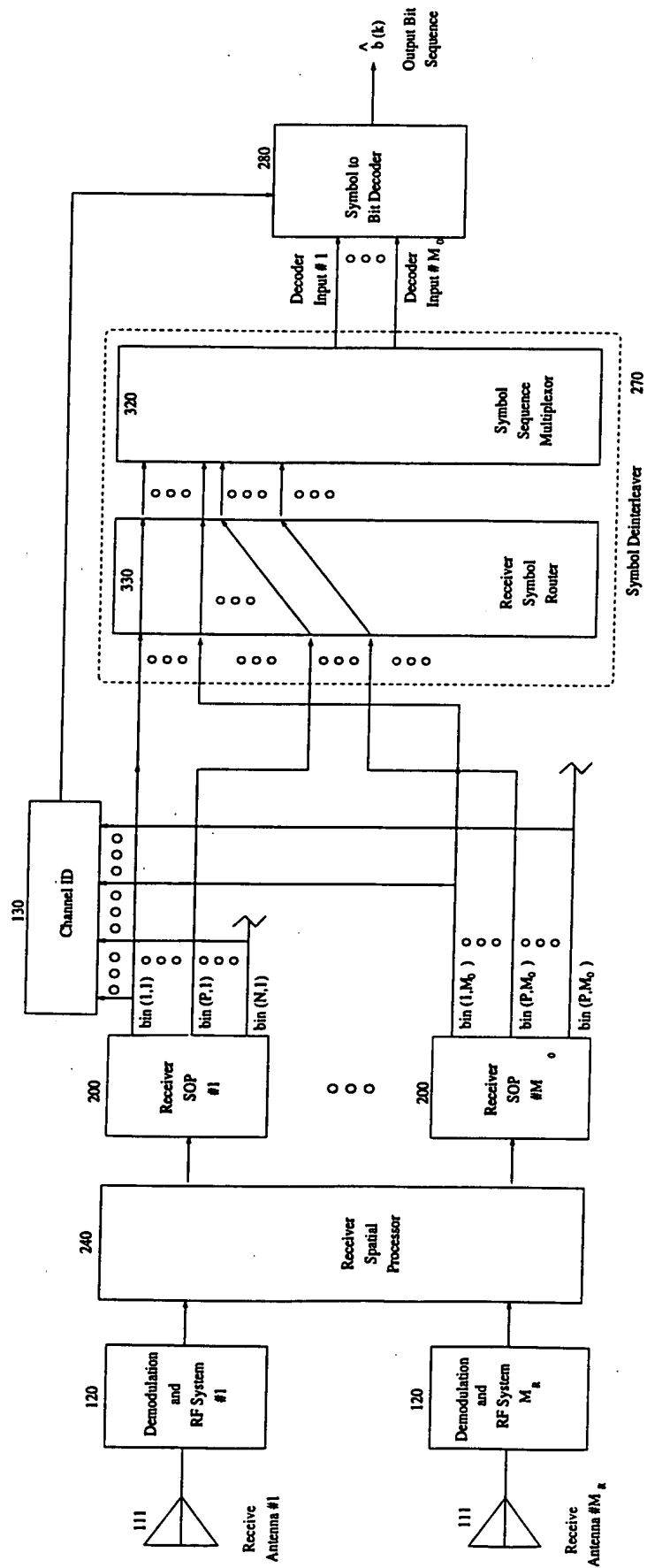


Fig. 25

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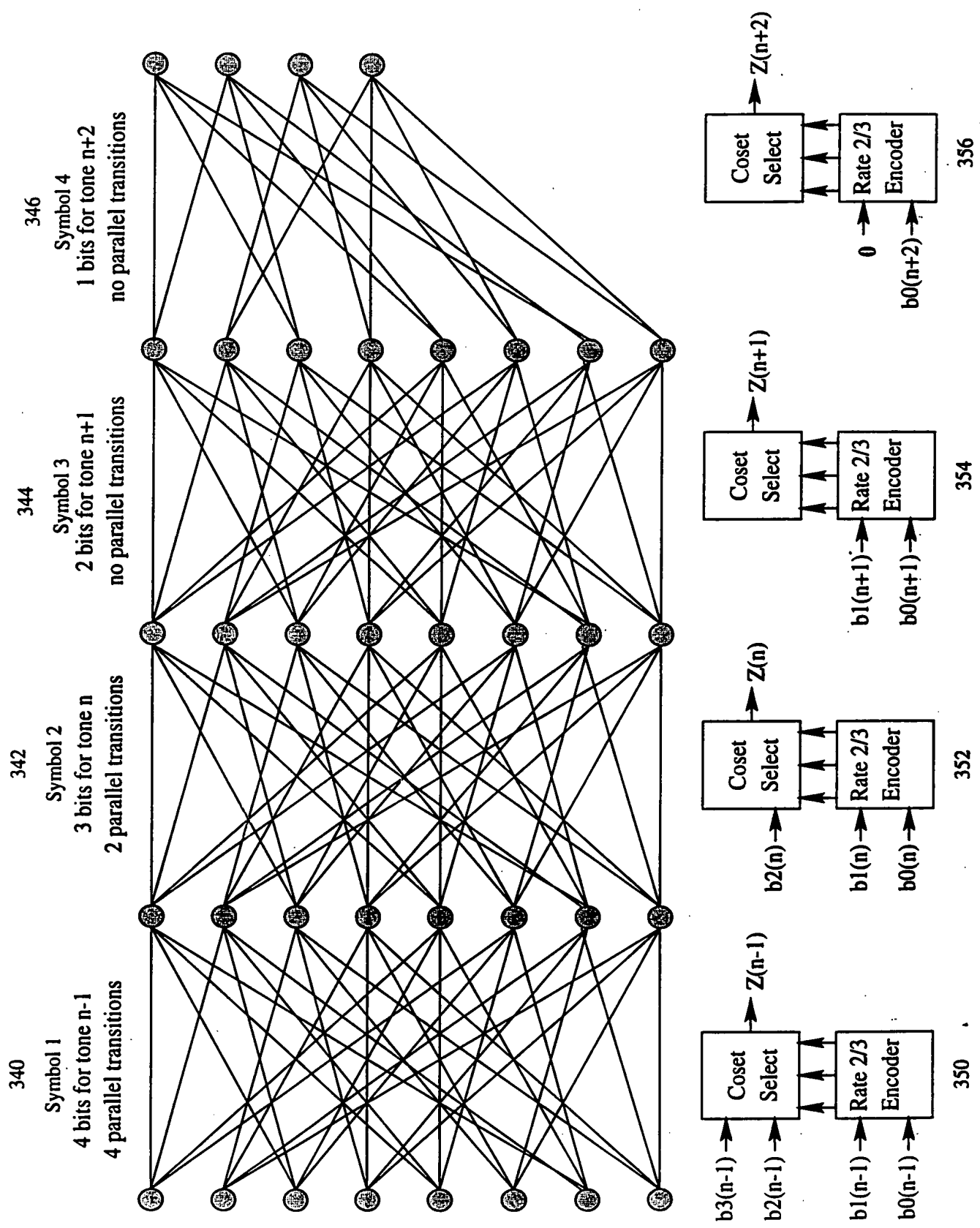


Fig. 26